VERSATILE AXIAL FAN AND CENTRIFUGAL SHUTTER MECHANISM

ABSTRACT

An efficient axial fan has housing with a square inlet opening and a round outlet opening, a fan assembly with a drive motor and a propeller coupled thereto. The entrance of the housing is provided with a shutter assembly disposed horizontally or vertically across the entrance of the fan and comprising a plurality of vanes including a central operative vane operated by a centrifugal shutter mechanism secured to one end of the propeller shaft, opposite to the propeller and adjacent to the operative central vane of the shutter assembly. The centrifugal shutter mechanism is normally provided with a hermetic housing comprising a pair of radial masses operatively connected by means of a pair of pivoting arms to an axial sliding reciprocating actuator which is disposed adjacent to the shutter central operative vane. When the fan is on, the radial masses by centrifugal action rotate the pair of arms which push the axial sliding reciprocating actuator away from the central operative vane allowing an extension spring associated with the shutter assembly to cause the opening of the shutter. When the fan is off, an internal compression spring housed within the axial sliding actuator pushes it against the central operative vane causing the closing of the shutter. The propeller comprises a plurality of radially disposed blades which are entirely surrounded by a Venturi and are provided with means for adjusting the tip blade clearance with the Venturi.